THE

Municipality of George Town,

PENANG,

STRAITS SETTLEMENTS.

BUREAU OF HYGIENE & TROPICAL DISEASES
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15 JUL 1929

Health Officer's

ANNUAL REPORT

FOR THE YEAR 1928.

Price 50 Cents Per Copy.

OBTAINABLE FROM THE MUNICIPAL SECRETARY.

1929.
THE CRITERION PRESS CO., LTD., PENANG.

STATISTICAL SUMMARY.

Situation	Lat. 5° 24′ N., Long. 100° 1′ E.
Average Elevation above L.W.M.O.S.T.	Town area 12 feet 6 inches. Country area 25 feet 0 inch.
O. S. Tides rise and fall	9 feet 0 inch.
Rainfall 1928 (average of three readings within Municipal limits).	86.90 inches.
Mean Temperature 1928	83.4° F.
Maximum Temperature 1928	92.6° F.
Minimum Temperature 1928	71.6° F.
Total area of Penang Island	108 sq. miles.
Area within Municipal limits	9.4 sq. miles or 5,845 acres.
Estimated population (mid. year)	141,348.
Density of population	24.18 per acre.
Crude death rate	33.04 per mille.
Infant mortality	155.
Birth rate	37.72 per mille.
Sterling equivalent of $1.00	2s. 4d.

15 JUL 1930

STAFF OF THE HEALTH DEPARTMENT ON 31st DECEMBER, 1928.

G. S. GLASS ... B.A., M.B., D.P.H., D.T.M. and H.,
Health Officer,
Registrar of Births and Deaths,
Deputy Superintendent of Vaccination,
Registrar of Midwives,
Medical Superintendent of Infectious Diseases Hospital,
Medical Superintendent of Chinese Small-pox Hospital.

W. H. BRODIE ... M.B., Ch.B., D.P.H.,
Deputy Health Officer,
Deputy Registrar of Births and Deaths,
Deputy Superintendent of Vaccination.

KHOO TIANG PHEAN M.B., B.S., (Hong Kong).
Deputy Registrar of Deaths.

W. A. WARD ...	Chief Sanitary Inspector,	joined the service	1st	January,	1893.
J. S. REUTENS ...	Sanitary Inspector,	joined the service	1st	January,	1905.
H. L. McCULLOCH ...	do.	do.	1st	January,	1912.
R. J. RANGEL ...	do.	do.	1st	October,	1913.
B. B. PETERS ...	Sanitary Sub-Inspector,	do.	1st	May,	1918.
M. D'SOUZA ...	do.	do.	1st	April,	1919.
JOHN LOH ...	do.	do.	17th	May,	1921.
OW LEONG CHYE ...	do.	do.	1st	July,	1921.
E. V. LESSLER ...	do.	do.	1st	July,	1921.
V. E. ROZELLS ...	do.	do.	1st	September,	1921.
LIM THEAN SOO ...	do.	do.	1st	September,	1921.
F. A. SCULLY ...	do.	do.	1st	May,	1922.
YEAP HIN TAT ...	do.	do.	14th	August,	1922.
LIM KHAY SENG ...	do.	do.	1st	March,	1923.
LO SIEW TEAN ...	do.	do.	1st	July,	1923.
TEOH CHENG HOE ...	do.	do.	1st	December,	1923.
M. S. D'ORVILLE ...	do.	do	18th	February,	1924.
LIM FOOK THOONG ...	do.	do.	1st	August,	1925.
OH CHENG GUAN ...	do.	do.	18th	May,	1926.
LIEW AH FOO ...	do.	do.	20th	May,	1926.
R. LESSLAR ...	do.	do.	17th	October,	1928.
Miss J. A. G. RONALD	C.M.B., District Nurse,	joined the service	9th	January,	1923.
Miss H. FLINT ...	S.R.N. C.M.B., A.R.SAN.I., District Nurse,	joined the service,	1st	May,	1928.

Eight Qualified Chinese Midwives as part-time District Nurses.

MUNICIPAL HEALTH OFFICE,

Penang, 22nd February, 1929.

To

THE MUNICIPAL COMMISSIONERS.

GENTLEMEN,

I have the honour to submit the following report on the health of the Municipality during 1928.

Population.

1. The estimated population was 141,348 divided among the various nationalities as follows:—

TABLE I.

Nationality.	Males.	Females.	Total.
European	731	420	1,151
Eurasian	739	866	1,605
Chinese ...	57,922	38,992	96,914
Malay	9,257	9,417	18,674
Indian	16,834	4,801	21,635
Others	808	561	1,369
Total ...	86,291	55,057	141,348

Births.

2. There were 5,332 births registered of whom 2,654 were males and 2,678 females, the birth rate being 37.72 per thousand. The figures for 1927 were, births 5,151 and birth rate 37.15.

Reckoned on the estimated female population alone the birth rate was 96.85 per thousand compared to 95.39 per thousand in 1927.

The number of births and the birth rates for the various nationalities were as follows:—

TABLE II.

Nationality.	Number of births.			Death rate per thousand.	
	Males.	Females.	Total.	Total Population.	Female Population.
European ...	29	29	58	50.39	138.09
Eurasian ...	19	33	52	32.40	60.05
Chinese ...	1,947	1,981	3,928	40.53	100.74
Malay ...	308	287	595	31.86	63.18
Indian ...	334	327	661	30.55	137.68
Others ...	17	21	38	27.03	67.74

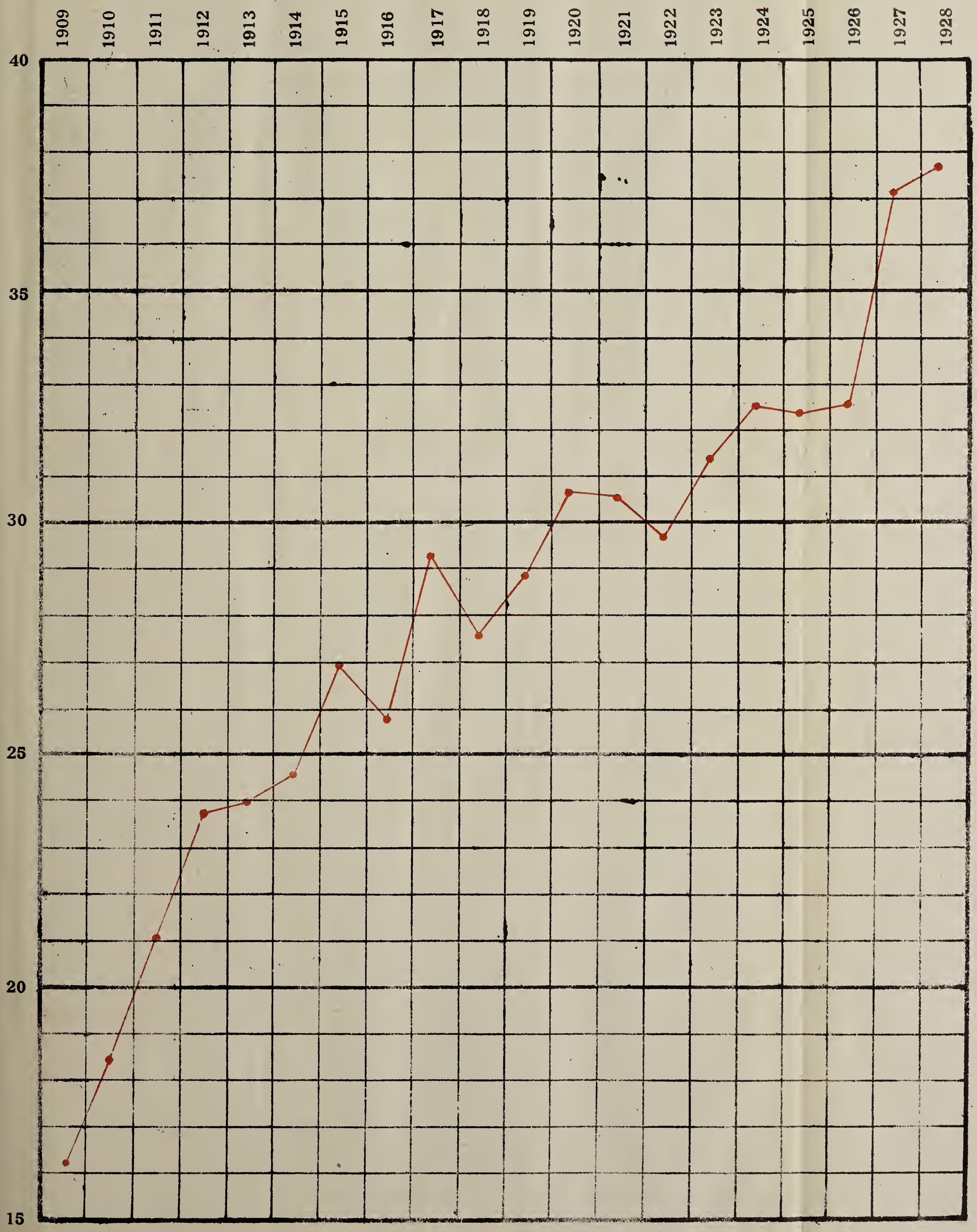
A comparison with the births registered during the previous ten years is shown:—

TABLE III.

Year.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.	Total.
1918	57	53	2,008	403	381	38	2,940
1919	41	51	2,134	481	467	29	3,203
1920	46	43	2,250	468	464	50	3,321
1921	48	71	2,623	557	437	32	3,768
1922	54	53	2,655	534	404	38	3,738
1923	59	53	2,818	573	499	26	4,028
1924	53	54	2,903	660	544	43	4,257
1925	46	52	3,135	562	497	26	4 318
1926	51	55	3,193	585	514	36	4,434
1927	61	75	3,714	638	631	33	5,151
Average for ten years.	52	56	2,743	546	484	35	3,916
1928	58	52	3.928	595	661	38	5,332

PENANG MUNICIPALITY.

BIRTH RATE.



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A comparison of the births and deaths in the different nationalities may be of interest:—

TABLE IV.

Nationality.	Births.	Birth rate per thousand	Deaths.	Death rate per thousand.
European .	58	50.39	11	9.56
Eurasian ...	52	32.40	24	14.95
Chinese ...	3 928	40 53	2,544	26.25
Malay ...	595	31.86	434	23.24
Indian ...	661	30.55	623	28.79
Others ...	38	27.03	32	23 37

Deaths.

3. The gross total of deaths within Municipal limits during the year was 4,670 and crude death rate 33.04; of this number 1,002 were not normally resident in Penang and had been less than three months within Municipal limits. Omitting these we have 3,668 deaths and a corrected death rate of 25.95 per thousand.

The following table shows the distribution of the deaths in age groups and nationalities.

TABLE V.

Nationalities.	SEX.	AGES.											Total.	Grand Total.
		Under 1 year.	1 to 5 year.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.	Unknown.		
European ...	M.	1	...	1	1	...	1	...	...	4	2	...	10	11
	F.	...	1	...	...	...	...	...	...	...	...	...	1	
Eurasian ...	M.	4	3	...	1	...	...	1	3	1	...	...	13	4
	F.	2	...	4	...	1	3	...	...	...	1	...	11	
Chinese ...	M.	350	130	60	107	203	256	239	166	83	22	20	1636	2544
	F.	269	114	51	74	85	83	68	57	63	39	5	908	
Malay ...	M.	49	31	14	14	21	21	31	18	17	12	1	229	434
	F.	32	27	8	17	25	20	19	15	21	19	2	205	
Indian ...	M.	57	26	6	41	88	95	62	27	14	5	5	426	623
	F.	55	21	6	21	30	17	8	14	9	14	2	197	
Others ...	M.	3	2	...	...	2	1	3	2	1	1	.	15	32
	F.		3	...	1	...	2	4	...	1	2	...	17	
Total ...	M.	464	192	81	164	314	374	336	216	120	42	26	2329	3668
	F.	362	166	69	113	141	125	99	86	94	75	9	1339	
Grand Total ...		826	358	150	277	455	499	435	302	214	117	35	3668	

Compared with 1927 the Chinese deaths have decreased by 120, the Malay deaths by 116 and the Indian deaths by 135.

The total deaths of each nationality in the last ten years is shown here.

TABLE VI.

Year.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.
1919 ...	13	34	2,539	528	872	38
1920 ...	11	44	2,398	382	676	42
1921 ...	10	26	2,213	394	629	41
1922 ...	12	34	2,130	464	544	46
1923 ...	9	31	2.066	467	573	35
1924 ...	6	30	2,048	519	542	17
1925 ...	5	28	2,165	468	538	30
1926 ...	9	34	2,436	497	563	26
1927 ...	11	29	2,664	550	758	33
1928 ...	11	24	2,544	434	623	32

Appended is Table VII showing the infant mortality in the various nationalities and a comparison with 1927.

TABLE VII.

Nationality.	Births.	Deaths under one year.	Infant deaths per thousand births,	
	1928.		1928.	1927.
European ...	58	1	17	33
Eurasian ...	52	6	115	54
Chinese ...	3,928	619	158	158
Malay ...	595	81	136	171
Indian ...	661	112	169	176
Others ...	38	7	184	61
Total ...	5,332	826	155	153

The chief causes of infant deaths and the mortality compared with that in previous years from the same causes are given in Table VIII.

PENANG MUNICIPALITY.

INFANT MORTALITY.

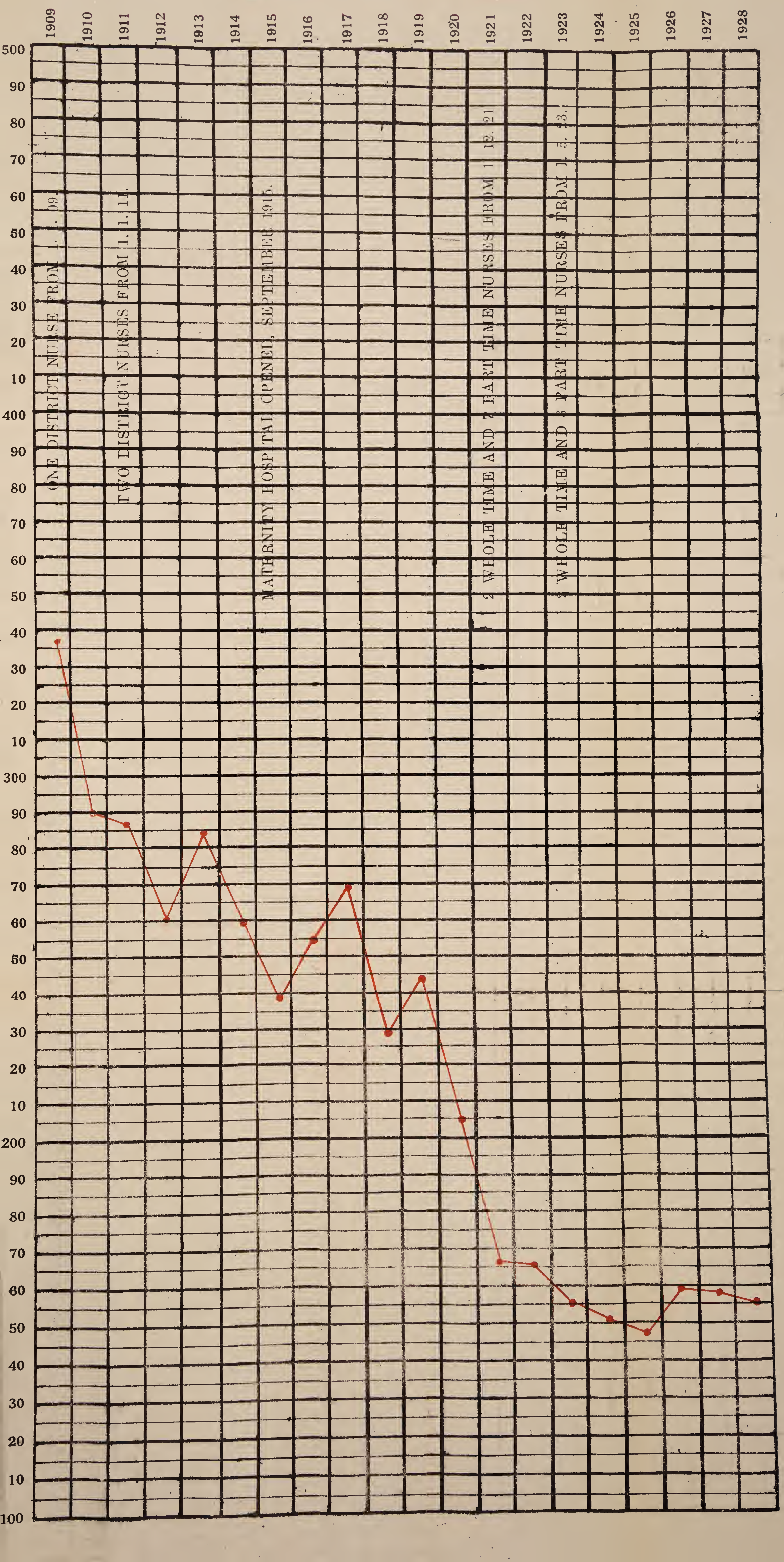


TABLE VIII.

	Infant deaths per thousand births.									
	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Tetanus ...	39	34	22	2	8	4	0.5	0.23	0.19	0.38
Intestinal diseases ...	71	54	38	36	37	23	19	21	14	17
Respiratory diseases...	46	41	31	24	27	23	27	19	26	32
Prematurity & Debility	48	47	32	15	26	27	23	29	22	29
Convulsions ...	9	9	24	59	23	43	47	60	71	62

These causes accounted for 750 of the 826 infant deaths which occurred.

Two infants were certified as having died from tetanus and 331 were returned as having died from convulsions; the corresponding figures for 1927 are 1 and 368.

Table VIII is unreliable, the only figures that may be used with any exactitude for comparison are those given in Table VII.

Table IX is given below to show a comparison between births, infant mortality and general death rate for the preceding ten years and for 1928.

TABLE IX.

Year.	Estimated population.	Births.		Deaths under 1 year.		Deaths at all ages.			
		Total.	Rate per thousand population.	Total.	Rate per thousand births.	Crude Total.	Corrected Total.	Crude Rate.	Corrected Rate.
1918 ...	106,723	2940	27.55	673	229	4909	4430	45.99	41.50
1919 ...	107,502	3203	28.86	782	244	4466	4024	41.54	37.43
1920 ...	108,286	3321	30.67	681	205	4090	3554	37.75	32.82
1921* ...	123,300	3768	30.56	631	167	3775	3313	30.61	26.87
1922 ...	125,834	3738	29.71	622	166	3768	3230	29.94	25.67
1923 ...	128,300	4028	31.39	626	155	3801	3183	29.62	24.81
1924 ...	130,810	4257	32.54	641	151	3811	3162	29.13	24.17
1925 ...	133,373	4318	32.38	634	147	3858	3240	28.93	24.29
1926 ...	136,000	4434	32.60	705	159	4396	3570	32.32	26.25
1927 ...	138,635	5151	37.15	816	158	4860	4045	35.05	29.18
Average for the preceding ten years.	123,876	3916	31.34	681	178	4173	3575	34.09	29.30
1928 ...	141,348	5332	37.72	826	155	4670	3668	33.04	25.95

*Census year.

Cause of Death.

4. Table X shows the age, sex and cause of death certified; 1,459 of the certificates were from Hospitals or Private Practitioners, 68 from the Coroner and 2,141 or 58.37% of the total from the Deputy Registrar of Deaths.

In other words less than half of the cases were under medical attention before death. As the number of post-mortem examinations made was so small as to be negligible, the diagnoses here tabulated must be accepted with reserve.

Since the year 1921, the Deputy Registrar of Deaths has been instructed to use the term "Unspecified Fever" for the cause of death, where the information obtainable does not seem to warrant a more definite diagnosis. (See further remarks under the heading Registration of Births and Deaths on page 17).

TABLE X.

DEATHS.	SEX.	AGES.											Total.	Grand Total.
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.	Unknown.		
Enteric fever ...	M.	...	...	2	4	4	2	1	...	...	...	...	13	23
	F.	...	1	...	2	3	...	3	1	...	...	...	10	
Diarrhoea ...	M.	41	26	3	3	2	4	7	4	...	1	...	91	154
	F.	22	21	4	1	4	2	3	3	1	2	...	63	
Dysentery ...	M.	2	6	3	3	7	21	17	8	2	...	...	69	94
	F.	4	3	1	2	2	4	3	2	2	2	...	25	
Remittent fever ...	M.	...	...	..	...	...	...	1	1	...	...	...	2	3
	F.	...	...	...	..	...	1	...	...	...	...	...	1	
Unspecified fever	M.	14	28	24	32	53	52	44	17	1	1	...	266	413
	F.	20	15	14	21	23	28	14	9	2	1	...	147	
Syphilis ...	M.	2	...	...	2	10	7	11	3	...	...	...	35	43
	F.	3	2	...	...	2	...	...	1	...	...	...	8	
Puerperal fever ..	M.	...	...	...	...	...	...	...	...	...	...	...	..	8
	F.	...	...	...	3	3	2	...	...	...	...	...	8	
Other septic diseases ...	M.	8	5	...	3	9	10	12	9	1	1	...	58	77
	F.	8	...	1	5	1	1	1	1	1	...	...	19	
Phthisis ...	M.	...	1	3	24	75	100	74	36	4	...	4	321	432
	F.	...	3	1	19	34	33	14	6	1	...	...	111	
Other tubercular diseases ...	M.	...	1	1	1	...	3	2	...	...	...	...	8	16
	F.	...	...	3	2	2	...	1	...	...	...	...	8	
Leprosy ...	M.	..	...	...	...	...	...	1	...	...	...	...	1	3
	F.	...	...	..	...	1	...	...	...	1	...	...	2	
Tetanus ...	M.	2	1	...	1	1	...	2	1	...	...	...	8	11
	F.	...	...	2	...	...	...	1	...	...	...	...	3	
Measles ...	M.	...	1	...	...	...	...	...	...	...	...	...	1	1
	F.	...	...	...	...	...	...	...	...	...	...	...	...	
Diphtheria ...	M.	...	...	2	...	...	...	...	...	...	...	...	2	5
	F.	...	1	...	...	...	1	1	...	...	...	...	3	
Influenza ..	M.	1	...	...	1	1	1	...	...	...	...	...	4	1
	F.	...	1	1	..	2	...	...	2	...	...	...	6	
Erysipelas ..	M.	1	...	...	..	...	...	..	...	...	...	...	1	1
	F.	...	...	...	...	...	...	...	...	...	...	...	...	
Totals to carry forward ...	M.	71	69	38	74	162	200	172	79	8	3	4	880	129
	F.	57	47	27	55	77	72	41	25	8	5	...	414	

TABLE X.—*Continued.*

DEATHS.	SEX.	AGES.											Total.	Grand Total.
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.	Unknown.		
Brought forward	M.	71	69	38	74	162	200	172	79	8	3	4	880	1294
	F.	57	47	27	55	77	72	41	25	8	5	..	414	
Malaria ...	M.	3	2	6	23	47	24	18	4	...	1	...	138	168
	F.	2	...	5	8	5	4	4	2	...	...	...	30	
Malarial cachexia	M.	...	...	...	1	1	1	1	...	...	...	...	4	5
	F.	...	...	...	1	...	...	...	...	...	...	...	1	
Worms ...	M.	...	5	4	...	6	.	...	...	...	...	..	15	38
	F.	2	10	5	1	4	...	...	...	1	...	...	23	
Rheumatism ...	M.	...	..	...	...	...	1	1	3	...	...	...	5	13
	F.	...	...	1	...	1	2	1	2	1	...	...	8	
Cancer ...	M.	...	...	...	1	..	1	6	1	4	1	...	14	34
	F.	...	...	...	..	...	5	4	5	6	...	..	20	
Anaemia ...	M.	..	...	...	...	2	...	3	...	...	...	.	5	10
	F.	...	1	...	...	...	3	1	...	...	...	...	5	
Beri-beri ...	M.	...	...	...	3	3	1	...	1	...	...	...	8	11
	F.	...	...	...	3	...	...	...	...	...	...	...	3	
Premature birth	M.	48	...	..	...	...	...	...	...	...	...	...	48	85
	F.	37	...	.	...	..	...	...	..	...	...	...	37	
Old Age ...	M.	...	...	...	...	...	..	...	45	70	31	...	146	290
	F.	...	...	..	...	...	...	...	26	55	63	...	144	
Convulsions ...	M.	179	39	3	...	...	...	...	...	...	...	..	221	424
	F.	152	47	4	...	...	...	...	..	...	...	...	203	
Other diseases of nervous system	M.	1	1	...	4	3	5	8	1	...	...	...	23	30
	F.	1	...	1	1	1	2	1	...	...	...	...	7	
Organs of special sense ...	M.	...	...	1	...	...	...	...	...	...	...	...	1	2
	F.	...	...	...	...	...	1	...	...	...	...	...	1	
Circulatory system	M.	2	1	2	10	16	30	27	21	16	4	5	134	188
	F.	2	1	...	9	6	8	12	4	10	1	1	54	
Totals to carry forward ...	M.	304	117	54	116	240	273	236	155	98	40	9	1642	2592
	F.	253	106	43	78	94	97	64	64	81	69	1	950	

TABLE X.—*Continued.*

DEATHS.	SEX.	AGES.											Total.	Grand Total.
		Under 1 year.	1 to 5 years.	5 to 15 years.	15 to 25 years.	25 to 35 years.	35 to 45 years.	45 to 55 years.	55 to 65 years.	65 to 75 years.	over 75 years.	Unknown.		
Brought forward	M.	304	117	54	116	240	273	236	155	98	40	9	1642	2592
	F.	253	106	43	78	94	97	64	64	81	69	1	950	
Bronchitis ...	M.	33	17	2	...	1	6	21	24	5	...	..	109	190
	F.	30	18	1	1	2	3	10	9	5	2	..	81	
Pneumonia ...	M.	33	28	14	22	32	29	31	10	...	...	7	206	312
	F.	29	23	9	15	12	7	6	3	2	...	...	106	
Other diseases of respiratory system	M.	27	21	6	4	14	16	10	4	5	...	1	108	168
	F.	20	15	6	3	7	2	2	2	2	...	1	60	
Enteritis ...	M.	7	5	1	1	2	5	1	...	...	...		22	35
	F.	4	2	...	1	...	2	3	...	1	...	...	13	
Diseases of liver	M.	3	..	...	3	4	8	8	3	2	...	..	31	38
	F.	..	..	1	1	2	1	...	2	...	...	...	7	
Other diseases of digestive system	M.	7	1	...	2	4	12	5	6	1	...	...	38	49
	F.	1	1	3	1	..	1	2	1	1	...	..	11	
Glandlike organs of uncertain use	M.	.	...	...	...	...	...	...	...	...	...	...	...	2
	F.	...	...	1	...	1	..	...	...	...	...	...	2	
Urinary system	M.	2	1	1	7	9	14	20	11	5	2	...	72	103
	F.	1	..	2	2	5	6	8	5	1	1	...	31	
Generative organs	M.	...	..	..	...	...	...	...	...	...	...	...	.	8
	F.	...	...	..	1	3	2	2	..	...	...	...	8	
Child birth and abortion ...	F.	..		...	7	11	3	...	...	...	...	...	21	21
Bones and joints	M.	...	1	..	1	...	...	...	...	...	...	...	2	2
	F.	..	...	...	...	...	...	...	...	...	...	...	...	
Accident and Negligence ...	M.	...	...	2	5	7	8	...	..	2	...	1	25	33
	F.	...	...	2	2	2	1	...	...	...	...	1	8	
Homicide, Suicide and Execution	M.	...	...	1	3	1	3	1	...	1	...	4	14	25
	F.	...	...	1	1	1	...	1	...	1	...	6	11	
Debility ...	M.	48	1	...	...	...	.	1	1	...	...	...	51	79
	F.	24	1	...	...	...	...	...	...	...	3	...	28	
Diabetes ...	M.	...	.	...	...	..	...	2	2	1	...	...	5	7
	F.	..	...	...	...	1	...	1	...	...	..	...	2	
Unknown ...	M.		...	...	...	...	...	...	...	...	...	4	4	4
	F.	...	...	..	...	..	...	...	...	...	...	...	...	
Total ...	M.	464	192	81	164	314	374	336	216	120	42	26	2329	3668
	F.	362	166	69	113	141	125	99	86	94	75	9	1339	

A comparison between the number of deaths attributed to some of the principal causes in 1928 and in the preceding ten years is shown here.

TABLE XI.

	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	Average for preceding ten years.	1928
Phthisis ..	722	693	677	580	455	454	511	499	460	422	547	432
Pneumonia ...	559	243	235	220	266	222	188	276	349	413	297	312
Bronchitis ...	198	152	146	126	88	112	58	113	91	142	123	190
Malaria ...	478	606	505	420	134	101	52	97	134	147	267	168
Unspecified fever	323	68	20	116	504	524	589	659	809	767	438	413
Enteritis ...	257	318	265	186	73	97	9	35	42	36	132	35
Convulsions ...	48	51	47	124	244	106	202	218	318	438	180	424
Dysentery ...	130	188	138	115	108	75	81	58	89	87	107	94
Diarrhoea ...	30	49	23	115	147	166	157	125	144	149	111	154
Beri-beri ...	262	238	143	102	71	30	15	6	9	16	89	11
Debility ..	95	153	143	103	44	77	82	61	62	61	88	79
Tetanus ...	199	133	120	91	14	39	20	4	4	9	63	11
Old Age ...	141	174	112	173	203	274	302	287	241	293	220	290

The distribution of the chief causes of death among the various nationalities is shown in Table XII.

TABLE XII.

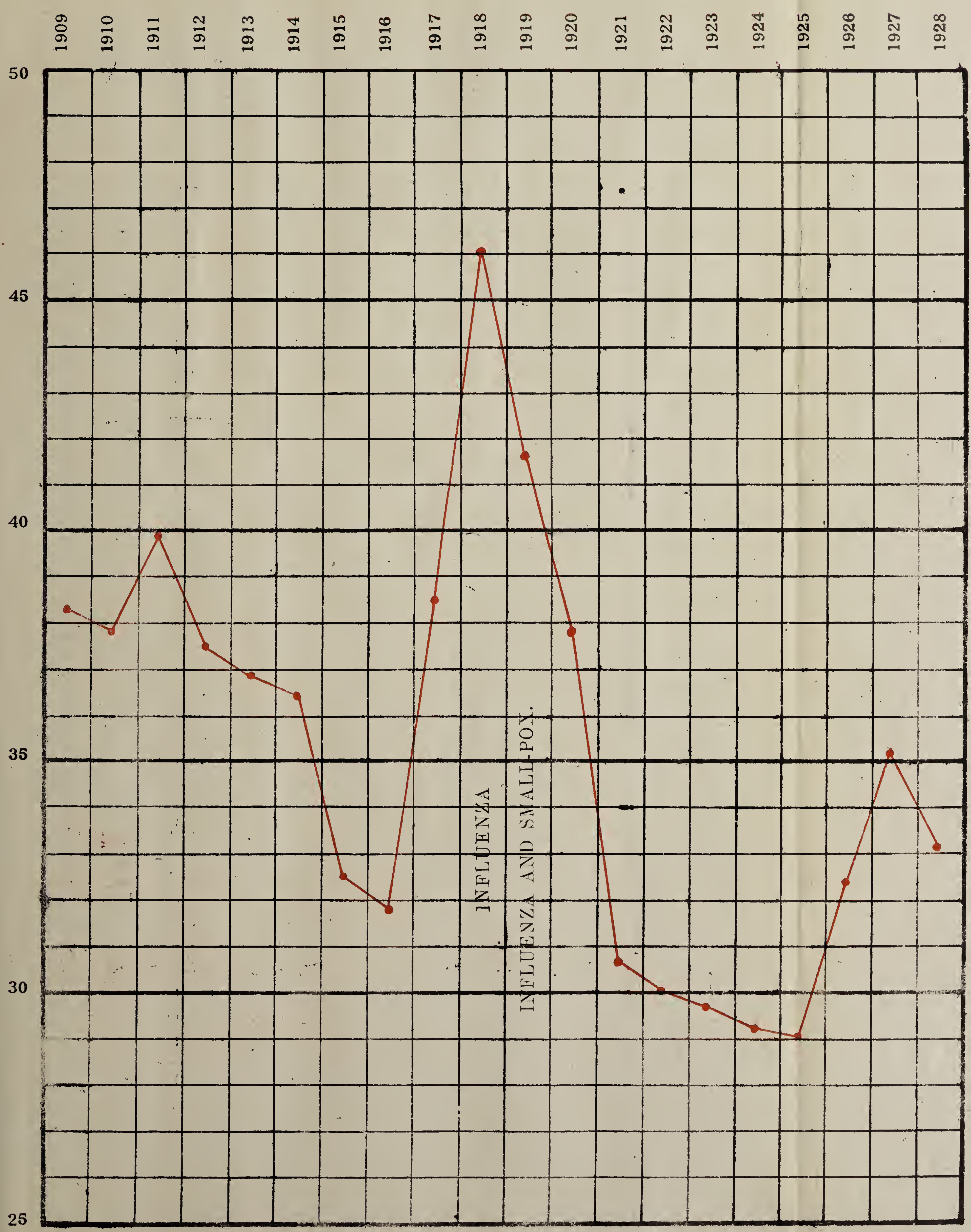
Certified cause of death.	European.	Eurasian.	Chinese.	Malay.	Indian.	Others.	Total.
Diarrhoea ...	...	1	136	4	11	2	154
Dysentery ...	1	1	60	5	27	...	94
Unspecified fever ...	...	1	213	103	93	3	413
Syphilis ...	...	...	31	1	10	1	43
Other septic diseases ...	...	1	54	3	18	1	77
Phthisis ...	...	3	342	34	49	4	432
Malaria ...	...	3	119	1	45	...	168
Convulsions ...	...	...	294	81	45	4	424
Diseases of Circulatory System ...	2	3	137	23	22	1	188
Bronchitis ...	...	1	150	16	22	1	190
Pneumonia ...	...	1	213	20	74	4	312
Other Respiratory diseases ...	...	1	122	9	34	2	168
Enteritis ...	...	...	23	5	7	...	35
Diseases of the Urinary System ...	...	1	75	7	19	1	103
Debility ...	...	...	53	7	19	...	79

TABLE XIII.

Cause of Death.	Number Certified by			
	Hospitals.	Private Practitioners.	Deputy Registrar of Deaths.	Coroner.
Enteric fever ...	14	9	...	...
Diarrhoea ...	3	25	126	...
Dysentery ...	53	31	9	1
Unspecified fever ...	3	43	367	..
Phthisis ...	145	69	213	5
Tetanus ...	5	5	1	..
Influenza ...	1	9	...	...
Malaria ...	108	52	7	1
Beri-beri ...	4	7	...	...
Old Age ...	5	12	273	...
Convulsions ...	4	40	380	...
Diseases of the Circulatory System ...	39	77	61	11
Bronchitis ...	6	24	160	...
Pneumonia ...	50	46	208	8
Enteritis ...	7	15	13	...

PENANG MUNICIPALITY.

CRUDE DEATH RATE.



Seasonal Mortality.

5. The deaths and death rate for each month are here recorded.

TABLE XIV.

Month.	Deaths.	Death rate per thousand.	Month.	Deaths.	Death rate per thousand
January ...	332	27.73	July ...	314	26.22
February ...	302	26.96	August ...	265	22.13
March ...	303	25.31	September ...	266	20.32
April ...	290	25.03	October ...	288	24.05
May ...	376	31.40	November ...	289	24.94
June ...	337	29.09	December ...	306	25.00

Infectious Diseases.

6. Table XV shows the incidence among the various nationalities of the principal infectious diseases which occurred during the year.

TABLE XV.

Nationality.		Chicken-pox.	Enteric fever.	Tuberculosis.	Influenza.	Puerperal fever.	Diphtheria.	Measles.	Total.
European ...	M.	...	...	...	...	...	..	...	...
	F.	...	...	...	1	...	...	...	1
Eurasian ...	M.	3	1	1	...	...	...	...	5
	F.	...	1	2	...	1	1	...	5
Chinese ...	M.	5	18	269	3	...	4	3	302
	F.	10	10	87	3	3	10	1	124
Malay ...	M.	2	2	19	...	...	...	...	23
	F.	...	...	15	1	1	...	...	17
Indian ...	M.	65	2	38	1	...	...	5	111
	F.	12	...	12	1	4	...	..	29
Others ...	M.	...	1	2	...	...	...	...	3
	F.	...	...	3	...	...	...	...	3
Total ...	M.	75	24	329	4	...	4	8	444
	F.	22	11	119	6	9	11	1	179
Grand Total ...		97	35	448	10	9	15	9	623

Registration of Births and Deaths.

7. Births may be reported within fourteen days; or on payment of a late fee of one dollar within forty-two days, at any Police Station or at the Municipal Office.

Deaths may be reported in the same way within twelve hours, or with the same late fee within three days.

Registration is on the whole well done, though delay sometimes occurs owing to misunderstanding or ignorance.

On the other hand the registration of the cause of death is far from satisfactory. In addition to ordinary mistakes in diagnosis, we have to contend with the fact that more than half our deaths occur in people who were not under medical attention, and the diagnosis is arrived at by the Deputy Registrar after viewing the body and hearing such information as may be available.

It is not surprising that he so frequently has to confess inability to form an accurate diagnosis by using such terms as "unspecified fever" and "convulsions."

The "unspecified fever" class must be taken mostly to be cases of phthisis and of malaria. We know that housing conditions and overcrowding in the town favour the propagation of phthisis, while malaria, though rarely contracted within our limits, is prevalent all around the town and on the mainland.

Of 33 cases where the Deputy Registrar submitted blood films, having reason to believe the cause of death to be malaria, parasities were found in only seven.

The examination of the films was kindly made for us by the Government Pathologist.

Deaths from "convulsions" should perhaps be attributed mostly to improper feeding of infants, still unfortunately very common.

We hope that as qualified midwives take the place of "handy women" rational feeding of babies will become the rule rather than the exception.

Tuberculosis.

8. 164 living cases were notified and 448 deaths from tuberculosis of all forms. The notified phthisis deaths would mean a rate of 2.99 per thousand, which is a high figure.

Better means of diagnosis would give a much higher figure I fear. We record 413 deaths from unspecified fever, 290 from old age, 190 from bronchitis and 312 from pneumonia. Of these 1,205 deaths, 1,008 being diagnosed on post mortem inspection and interrogation of relatives, how many were due to phthisis?

I do not find much comfort in these figures.

Phthisis remains our most important cause of disease and death, and its prevention our most difficult problem to solve.

Housing conditions seem to improve, slum areas to decrease and a great many new houses have been built, but still gross overcrowding continues.

There are fewer unventilated rooms in the town than formerly, and I hope and believe that we have an increasing number of citizens who appreciate the benefits of an open window, yet insufficient ventilation remains one of our commonest sanitary defects.

We have then, in many houses three most important factors favouring the spread of phthisis, lack of ventilation, overcrowding, and a constant reservoir of infection in persons already the victims of the disease.

Where cases of phthisis are known or suspected to exist our staff give personal advice, but the value of such advice is less than it might be, since cases are mostly notified to us by doctors who have already advised the patient and his relatives, and only too often others in the household are already infected and isolation is impracticable.

We also disinfect living quarters where a death from phthisis has been reported.

In an interesting little book published in 1928, Professor Chagas, Director-General of Public Health, Brazil, makes the statement, with reference to infectious diseases in general, that "terminal disinfection is entirely useless if 'current' disinfection (carried out, that is to say, during the course of the malady) has been performed with the necessary care and thoroughness."

In Penang it is seldom, if ever, that thorough current disinfection has been performed, and it seems very advisable to continue terminal disinfection, especially of bedding, mosquito nets and the like.

In speaking of tuberculosis, Professor Chagas yields a little.

"Let us make," he says, "a harmless concession to preconception. Let us thoroughly clean out the sickroom. There can be no harm in that!"

We cannot expect much more in Penang, where it would be a laborious business to seal up most bedrooms for the purpose of disinfection.

Two quotations given by Chagas raise a doubt whether we are justified in using the ordinary disinfectant solutions which the public expect to see on such occasions.

"What we ought unwearyingly to teach the public is the saving virtue of soap and water. When these have been used freely and to the full, there is very little left for disinfectants to do." (Naylor-Barlow).

"Even the rooms inhabited by tuberculous patients of careless and ignorant type can be rendered completely harmless by the simple use of soap and water and a scrubbing brush, by free aeration, and the action of sunlight." (Brady).

I have maintained a similar attitude for many years, and feel sure that much money is unwisely spent on powerful but costly disinfectants. Anyone who has worked in a bacteriological laboratory knows how difficult it is to keep alive many of our disease germs outside the human body, and what skill and care is needed in the preparation of suitable culture media and in the preservation of a suitable temperature.

Such germs die readily in an ordinary bedroom, making disinfectants unnecessary, while for the hardier spore-bearing organisms it is safer to trust to the mechanical removal by washing than to the lethal effect of any disinfectant as popularly used.

9. During the year no case was reported of small-pox, plague, cerebro-spinal meningitis, or whooping cough.

Enteric Fever.

10. 35 cases were reported, 2 Eurasians, 28 Chinese, 2 Malays, 2 Indians and 1 Jew.

17 cases were treated in Hospital; 13 died, 4 recovered.

18 remained at home, 10 died and 8 recovered.

Chicken-Pox.

11. 97 cases were reported, 88 of which were admitted to the Quarantine Camp. There were no deaths.

Of the total, 3 were Eurasians, 15 Chinese, 2 Malays and 77 Indians.

As usual the Indians showed a distinct susceptibility to this disease, the number affected being quite out of proportion to the size of the community.

Puerperal Fever.

12. 9 cases were reported, compared to 10 in 1927.

3 cases were Chinese, one Malay, 4 Indians and 1 Eurasian, all died.

Influenza.

13. Under Ordinance No. 157 (Quarantine and Prevention of Disease), this is classified as a dangerous infectious disease.

10 persons were reported as having died of this disease: one European, 6 Chinese, 2 Indians and one Malay.

2 cases each were reported in April and June and one each during the remaining months, except July, September, October, and November.

9 cases were notified by General Practitioners, and one by General Hospital.

Diphtheria.

14. 15 cases were notified: 14 Chinese and 1 Eurasian; their ages varied from 13 months to 48 years. 10 were admitted to Hospitals and 4 died. 5 were treated at home, 4 of whom recovered.

Measles.

15. This infectious disease is not notifiable under Ordinance No. 157 (Quarantine and Prevention of Disease). Each year some cases come under our attention, but the disease has never assumed epidemic proportions.

9 cases were brought to our notice.

4 were Chinese and 5 Indians.

7 cases were treated in the Quarantine Camp; all recovered.

2 cases were treated at home; one died.

Mumps.

16. This disease, like measles, is not notifiable.

4 cases were reported, 2 were Indians and 2 Malays.

3 were treated in Hospital and 1 in Quarantine Camp; all recovered.

Infectious Diseases Hospital, Perak Road.

17. 115 patients and 22 healthy contacts were admitted.

Details of diseases and nationalities are shown in Tables XVI and XVII.

TABLE XVI.

Disease.	Remaining on 31.12.27.	Admitted.	Total.	Discharged.	Transferred	Died.	Remaining on 31.12.28.
Chicken-pox ...	1	92	93	88	1	...	4
Measles ...	...	11	11	11	...	...	...
Mumps ..	..	5	5	5	...	...	...
Meningitis ...	...	1	1	...	...	1	...
Pneumonia ...	...	1	1	1	...	...	...
Syphilis ...	...	1	1	1	...	...	...
Observation ...	...	3	3	3	...	...	...
Total ...	1	114	115	109	1	1	4

TABLE XVII.

Nationality.	Remaining on 31.12.27.	Admitted.	Total.	Discharged.	Transferred	Died.	Remaining on 31.12.28.
Eurasian ...	...	1	1	1	...	...	..
Chinese ..	...	19	19	19	...	...	...
Malay ..	...	5	5	4	...	...	1
Indian ...	1	111	112	105	1	1	5
Total ...	1	136	137	129	1	1	6

Of the six remaining in Hospital 5 were Indians and 1 Malay.

Four were suffering from Chicken-pox and 2 contacts.

Vaccination.

18. Our system of infant vaccination is the same as in recent years.

When a birth is reported, one of our staff proceeds to verify the address if possible, and leaves at the house a short leaflet of advice as to vaccination and how to get free vaccination if desired.

After six months if the vaccination, or the removal from the town, or the death of the child has not been reported, the house is revisited and the parents reminded that vaccination is overdue.

Most of the vaccination is done on house to house visitation by three of our Sub-Inspectors and the results are satisfactory.

5,332 births were reported during the year.

Our staff did 2,995 vaccinations, of which 2,757 were primary and 238 secondary; other public vaccinators and private practitioners did 1,085 vaccinations, total vaccinations 4,080.

826 infants died under age of one year of whom about 745 were unvaccinated.

Anti-Mosquito Works.

19. At the beginning of the year our Indian labour force consisted of 130 coolies and 30 boys or "chokras."

The men were divided into four working gangs, one of their number being appointed head man in each to supervise the others and not to do manual labour himself. In addition, there were two gangs of oilers with six men in each, both gangs being supervised by a man of the messenger or process-server type.

The working gangs were employed chiefly on making ditches, clearing and training streams and stagnant ditches, filling in pools and hollows, and cutting undergrowth,—much of the work being done on the so-called "reserve roads."

The boys, divided in two gangs, each under a head boy, were most useful in collecting and where possible burying coconut shells, tins, and other receptacles likely to be mosquito breeding-places. They also do some minor oiling work.

Apart from the Health Officer's personal visits to these gangs, they were inspected and directed daily by the Sanitary Inspectors in whose districts they were working.

The general sanitary work of the Inspectors has increased greatly in recent years, and is now more than enough to keep them fully employed without trying to keep control of all the anti-mosquito workers. Moreover the chokras, being healthy human boys, are inclined to be noisy and at times perhaps even mischievous, unless they are kept under constant observation.

It seemed to me that better results could be obtained by better supervision without any increase in the number of men employed, while we might profitably engage more chokras, giving us three gangs of 15 each.

The Commissioners approved, and five Supervisors and an additional 15 chokras were engaged in July, the supervisors being young men of a good type. They are in charge of the gangs of chokras and oilers.

The supervision of the gangs of men remains unchanged. The head men have been picked as a reward for long service and good character and have proved satisfactory.

A small gang of four men has been employed since July on filling hollows in trees with a mixture of sand and cement. At first we dealt with roadside trees only, but many private owners have had their trees filled by us at their expense, and we have done much of this work on Crown land at the request of Government officers.

The Superintendent of our Fire Brigade kindly lent us a sectional ladder which has proved a great service to our tree gang.

It seems surprising that members of the general public so often tolerate the breeding of mosquitoes on their own premises in a district where Dengue is so common an affliction.

The amount of acute discomfort and disability caused by this disease would lead one to expect some personal activity in its suppression to be shown by the average citizen.

Some, of the more sensitive type, who resent even being bitten by mosquitoes, might surely keep their own premises free from breeding places for the little pests.

Yet we find mosquitoes breeding every day in quite respectable houses.

For years past we have been urging housekeepers to spend a few minutes at a fixed time once a week making a careful search all over their premises. The time would not be wasted even if there were no mosquitoes about, as a weekly tour of inspection is an elementary measure of preventive medicine, and would be well worth doing apart from its medical interest.

But it must be confessed that many are afflicted with apathy and others profess themselves afraid to look around their own kitchens and servants' quarters.

Malaria is not often acquired within our limits, but it must be remembered as a serious menace, since our most dangerous anopheline, *A. maculatus*, is prevalent all along our border.

We have found it breeding within our limits in the Ayer Itam area down to where the stream meets Batu Lanchang Lane.

To the North of that area it has been found in the various streams and seepages between the boundary and the line Scotland Road—Western Road—Waterfall Road.

It has also been taken along Mount Erskine Road near the boundary.

We have not found any other known malaria carrier.

Our commonest mosquitoes are various species of Culex and two of the *A. rossi* type.

Stegomyia mosquitoes, formerly so troublesome all over the town, can still be found, but are comparatively rare.

A. subpictus var. *malayensis* is our commonest anopheline and has been found very widely scattered over the town.

A. vagus and *A. kochi* have each been found in five suburban places, *A. barbirostris* in three, and *A. karwari* in two.

The amount of oil used was, crude oil 256 gallons, shell mineral turpentine 40 gallons, anti-malarial mixture 21,504 gallons and mosquito killer 10,000 gallons, the total cost of the oil being $11,486-46.

The amount recovered from Government and private owners for work performed by the coolies during the year was $1,354-42.

In spite of the apathy so often shown by residents here, the mosquito nuisance is very definitely less now that it was even a few years ago, and the expenditure on mosquito control seems fully justified.

Water Supply.

20. There was throughout the year an ample supply of potable water, the average daily consumption being approximately 46 gallons per head, including water supplied for trade purposes and shipping.

The low pressure during a rather long dry season caused some comment, but the quality of the water remained good, though it is still, of course, in many houses exposed to the perils of the domestic filter or that possibly more dangerous abnomination, the drip-stone.

The work on the new extension of the Water Scheme was well advanced during the year and some water from the nearer part of the scheme was in use in town during most of the year, while towards the end the two gangs cutting the tunnel met successfully giving access to the main Batu Ferringhi intakes.

This department supervises the general sanitation and especially the anti-malaria work on the new scheme.

The figures supplied by the Municipal Water Engineer and shown in Table XVI indicate a generally healthy labour force.

The dressers on the different sections have more important work to do than the treatment of the sick. They have been ordered to send to Hospital all cases of serious, doubtful or prolonged sickness.

When we take this into account, and remember the number of minor injuries requiring Hospital treatment which must occur in such a labour force, the total number of Hospital admissions must be confessed to be small.

It was disappointing to find the malaria incidence so high for a few months. The cause of this was some misguided and unauthorized timber-felling by a Chinese contractor in search of convenient firewood for the engine at the tunnel mouth.

This crime took longer to recover from than to commit.

TABLE XVIII.

PENANG WATER SCHEME (NEW EXTENSION).

Cases Treated In Hospital.

1926.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.
Total employed ...	201	239	311	345	363	381	566	745	838	860	896	991
Malaria ...	13	14	67	61	37	34	9	7	3	2	2	2
Other Causes ...	8	12	27	16	25	28	9	17	12	9	17	7
1927.												
Total employed ...	986	1030	924	969	1024	1030	1172	1250	1244	1280	1334	1358
Malaria ...	1	1	1	2	4	1	1	1	1	...	5	5
Other Causes ...	14	7	11	6	9	10	9	8	18	12	21	13
1928.												
Total employed ..	1391	1385	1363	1304	1345	1423	1309	1233	931	1047	1080	1101
Malaria ...	3	6	12	27	29	17	7	5	12	11	7	4
Other Causes ...	11	15	21	16	25	11	11	12	11	15	16	9

We assumed control of the sanitation of the new extension from April, 1926.

Maternity And Child Welfare.

21. The work was again supervised by Miss J. A. G. Ronald and Miss C. M. Gold at the beginning of the year, Miss H. Flint replacing Miss Gold from 1st May.

Eight locally qualified midwives were employed as part-time nurses.

The main part of the town is divided for this purpose into eight districts; to each district a midwife is allocated; each district nurse superintends the work in four districts.

The total number of visits and revisits made by the District Nurses and the eight midwives was about 44,100.

At the end of the year 44 midwives were registered (under the Midwives Ordinance 1923) as Class "A," 103 as Class "B," and 14 as Class "C."

Class "C" are the local "bidans"—unqualified midwives—who were registered after the Central Midwives Board had certified that they possessed a competent practical knowledge of conducting midwifery cases.

157 babies died less than seven days old and 65 between the ages of seven and fourteen days.

The Health Committee have under consideration the further development of some Maternity and Child Welfare Scheme, but I have not yet put before them any definite proposals.

The domestic visits of our nurses have proved useful and the increased appreciation of such visits gives us reason to believe that the establishment of an Infant Welfare Centre would be attended by good results.

It is generally accepted that Public Health work relating especially to the welfare of the mother and child is of primary importance. The Chief Medical Officer of the Ministry of Health writes in one of his reports:

> "It is hardly too much to say that the health of the mother and child is the basis of the health of the community. For here is the source of the nation. From a physical point of view, what the mothers and children are the nation is and will be. The question of their health should therefore stand first in the mind of the local health authority."

In the Municipality there is a Maternity Hospital, which was built by public subscription and opened in 1915 and which is now under Government control. There excellent work continues to be done for the patients in the wards, for the out patients who attend its clinic and in training midwives, many of whom engage in private practice in the town.

At present the Municipal staff engaged directly in Maternity and Child Welfare work, consists of two District Nurses and eight part-time native midwives whose duty it is to visit the homes where babies have recently been born. The following is the routine method of getting in touch with the mother and newly born child. When a birth is reported, a Sanitary Sub-Inspector proceeds to verify or correct the address given. A daily list of the addresses is then given to the District Nurses who on the following day visit the houses to see what is required. If the case is already under medical supervision we have no further responsibility.

In all other cases the District Nurses examine the baby and sometimes the mother also. If there is not a registered midwife in attendance one of our part-time qualified midwives takes charge of the case for as long as may be necessary, the District Nurse revisiting as required.

The chief use of the District Nurse is educational, not as her name would imply, attending to the sick. Such members of a Public Health staff are usually designated Health Visitors, and as such should have as their ideal the education of the parents towards the production of healthy babies and the keeping of those children fit through life. "The death rate of infants is the most sensitive index we possess of physical welfare and of the effect of sanitary government. A high infant mortality rate implies (a) the loss of many infants; (b) the maiming of many surviving children, for conditions which kill some, injure others; (c) a high death rate in the next four years of child life; (d) the existence of unhealthy conditions in the mothers and in the home life of the people." (Chief Medical Officer of the Ministry of Health.)

The Infant Mortality in Penang (155 for 1928) is to a deplorable extent influenced by the habit, which many parents have, of giving unnecessary and harmful food and drugs to infants. This habit is a good example of the disastrous results of well-intentioned but misguided efforts. 331 infants under the age of 12 months, including 166 who were less than three months old, died of convulsions.

In addition to the infant deaths caused by improper feeding, many children must suffer from the same cause, being both more liable to digestive disorders and less resistant to the attacks of other disease than sensibly fed children in similar surroundings.

Our nurses are therefore encouraged to spend much time discussing the feeding question during their visits.

In the Municipality we are but touching the fringe of Maternity and Child Welfare work, but it is hoped that a Maternity and Child Welfare scheme worthy of the name may exist before long. In our home visiting and the Maternity Hospital we have the nucleus of such a scheme. To the outpatient department of the Maternity Hospital where a Lady Medical Officer does excellent work, our District Nurses and Midwives can refer cases which require medical advice. But we have no child welfare centre to which mothers with healthy children can go and receive advice as to how to keep their children healthy. "In all areas where child welfare work is being developed we find reliance chiefly placed upon the visits of the health visitor to the home and upon medical advice for the healthy infant given at the consultation centre, the object of the whole work being preventive and educational rather than curative." "The Infant Welfare Centre indeed may be regarded as the outward and concrete expression, almost the backbone of the whole social campaign against infant mortality. It costs comparatively little to establish and maintain; its machinery is of the simplest, and that is one of its virtues; it is serviceable for antenatal work; it is a valuable means of advertising the need for infant care in the best possible way, as even the mother who does not attend hears about it and discusses what is done. The mother who does attend is called upon to use her brains and make a definite effort. She is not relieved of any responsibility towards her baby. She is advised what to do and how to do it, but it is for her to carry out the advice and the well-being of the baby depends upon her own individual efforts. She learns how to overcome some of her environmental difficulties as well as the personal care of her child. This practical and continuous training of the mother goes to the root of the whole matter. Without it and without her co-operation, little can be done. With it almost anything becomes possible. For the core of the problem is the equipment of each mother." (Chief Medical Officer of the Ministry of Health).

Markets.

22. We have one private general market, five public general markets, one public pig market and one public fish market.

The Municipal Engineer's department is responsible for the sanitation of the public markets, and the importance and difficulty of this work are appreciated.

Theatres.

23. All theatres and cinemas were inspected once a week. The standard of sanitation remains good.

Medical Attendance.

24. Medical advice or treatment was given to Municipal employees 5,858 times

The total for 1927 was 4,067 and for 1926 was 4,628.

The number seen per month varied from 292 in January to 654 in July.

The number seen in the different departments were:—

Engineer 3,983, Health 710, Electrical 146, Fire Brigade 80, Jinriksha 37, Water 795, Secretariat 86 and Veterinary 21.

SALE OF FOOD AND DRUGS ACT.

Milk.

25. That milk which is sold here as fresh natural cow's milk still leaves much to be desired both in purity and in cleanliness.

Some 4,742 lactometer tests were made by the Laboratory Assistant, and over 402 by the Sanitary Inspectors; 27 seemed to be below standard and samples of these were bought and analysed by the Deputy Government Analyst.

Twenty-three samples were found to be adulterated containing respectively, 6, 6, 7, 16, 17, 18, 18, 19, 22, 22, 24, 25, 27, 28, 30, 32, 32, 33, 35, 35, 39, 42 and 44 parts per cent. of added water.

Twenty-three vendors were prosecuted; 19 were convicted during the year and fines inflicted ranging from $10 to $500, and summonses against the remaining 4 were carried forward to 1929.

Twenty-five vendors were convicted on other charges: two for having a quantity of fish in their milk cans, three for conveying milk for sale in bottles of a type not approved by the Health Officer, three for having bottles or plantain leaves in contact with the milk, ten for selling milk containing foreign matter, three for failing to wear their badges on the left arm and four for selling milk without licence.

Eight vendors were convicted during the year for offences committed during 1927, one for selling adulterated milk was fined $75 and costs, and seven for selling milk containing foreign matter; of these one was fined $20 and the rest $15 each.

218 milk vendors were registered during the year after medical examination.

The total amount of fines inflicted on milk vendors was $2,491-50.

General Progress in Public Health.

26. A table has been prepared to show the simplest figures dealing with the main facts of the last twenty years.

For purposes of comparison, the Infant Mortality which is still very high is the only figure of unquestionable value, the flaw here being that in the earlier years the registration of deaths was more accurate than the registration of births.

The total number of births varies with the total population and with the proportion of females to males. It is therefore not fair to compare our births or birth rate of to-day with the figures of twenty years ago when there was a much smaller proportion of females.

The fact that we do not know accurately the total or the female population is a further complication.

The crude figure includes so many deaths of persons who never normally resided in the town as to give an erroneous impression, and this figure as well as the crude death rate is of less value because we do not know the population.

Look for example at the wonderful drop in the crude death rate in the census year 1921, due to previous underestimate of the population.

Taken with these mental corrections the table is useful, and shows that great improvement has taken place.

In 1928 we had 900 more deaths than in 1921 and 1,560 more births. The chief cause of increase is probably increase of population.

The English Registrar General's method of estimating the population, which we use, assumes a constancy in the rate of increase which does not here exist. That method, however, is the best available.

TABLE XIX.

Year.	Total number of		Birth rate.	Crude death rate.	Infant Mortality.
	Births.	Deaths (crude)			
1909	1656	3923	16.15	38.25	337 (a)
1910	1905	3912	18.39	37.76	290
1911	2133	4045	21.02	39.88	287 (b)
1912	2421	3829	23.69	37.47	261
1913	2464	3794	23.95	36.86	284
1914	2545	3774	24.55	36.40	260
1915	2808	3390	26.89	32.46	239 (c)
1916	2708	3341	25.74	31.76	255
1917	3099	4071	29.25	38.42	269
1918	2940	4909	27.55	45.99	229
1919	3203	4466	28.86	41.54	244
1920	3321	4090	30.67	37.75	205
1921	3768	3775	30.56	30.61	167 (d)
1922	3738	3768	29.71	29.94	166
1923	4028	3801	31.39	29.62	155 (e)
1924	4257	3811	32.54	29.13	151
1925	4318	3858	32.38	28.93	147
1926	4434	4396	32.60	32.32	159
1927	5151	4860	37.15	35.05	158
1928	5332	4670	37.72	33.04	155

Note:—(a) 1st January 1909—one District Nurse.

(b) 1st January 1911—two District Nurses.

(c) September 1915—Maternity Hospital opened.

(d) 1st December 1921—two whole time and seven part time District Nurses.

(e) 1st May 1923—two whole time and eight part time District Nurses.

Financial.

27. The total expenditure of the Health Department for 1928 was $157,574.83.

This includes the Quarantine Camp, the District Nurses Scheme, Vaccination, Anti-Mosquito Work, all pay and allowances and the Commissioners' donations to the Provident Fund of our staff.

The total receipts amounted to $20,330.34 leaving $137,244.49 as the cost of the department to the rate-payers.

This represents a rate of 2.117 per cent. or 5.081 pence in the pound sterling.

The estimated population being 141,348 the total cost of the department for the year per head of population is about 97 cents or about two shillings and three pence sterling.

Standing Committee.

28. In November, a Standing Committee of the Municipal Commissioners was appointed to deal with the affairs of this Department, thus meeting a longfelt want. Regular meetings are held on the first Wednesday of each month.

Staff.

29. Dr. W. H. Brodie, Deputy Health Officer, arrived in Penang and took up his duties on 4th May.

Miss C. M. Gold, District Nurse, resigned on 14th March and was replaced by Miss H. Flint on 1st May.

Mr. A. A. Jeremiah, Sanitary Inspector, retired on 6th August.

Mr. R. Lessler was appointed Sanitary Sub-Inspector on 17th October.

Mr. Ong Peng Kang, Clerk, was transferred to the Secretariat, and Mr. Lim Chin Aun was appointed in his place.

Mr. B. Amirtharaj, Supervisor, joined the service on 5th July.

Mr. J. Martin, Supervisor, joined the service on 5th July.

Mr. P. Gautier, Supervisor, joined the service on 6th July.

Mr. J. King, Supervisor, joined the service on 7th July.

Mr. Abdul Rahim, Supervisor, joined the service on 16th July.

I wish to record my appreciation of the continued excellent work of the staff of this department.

I have the honour to be,

Gentlemen,

Your obedient servant,

G. S. GLASS,

Municipal Health Officer.

Penang, 22nd February, 1929.

To

THE MUNICIPAL HEALTH OFFICER,
PENANG.

SIR,

I have the honour to submit the report of the work done by the staff during the year ending 31st December, 1928.

General Sanitation.

The staff made 22,573 inspection and 33,673 reinspections.

They found 1,639 defective and 1,819 filthy houses.

5,555 notices were issued and 5,552 (including 16 unserved and brought forward from 1927) were served: 5533 (including 313 outstanding on 31.12.27) have been complied with.

(Vide Detailed List Below).

NOTICES.	Outstanding on 31.12.27.	Unserved on 31.12.27.	New Notices issued 1928.	New Notices served 1928.	Unserved on on 31.12.28.	Complied with.	Work started.	Cancelled.	Brought forward to 1929.
Nuisance ...	121	10	143	152	1	182	26	5	86
Lime Washing ...	7	...	209	209	...	202	2	2	12
Latrines	90	...	364	358	6	367	22	9	72
Drains ...	15	1	130	131	...	129	...	5	12
Filthy premises ...	2	3	673	672	4	674	...	...	...
Common Lodging Houses ...	2	...	895	895	...	890	...	6	1
Trades ...	...	...	532	532	...	526	...	6	...
Bakeries ..	...	...	1092	1092	...	1092	...	...	...
Bylaws ...	15	...	253	252	1	255	...	...	12
Partitions ..	23	...	402	402	...	383	6	11	31
Mosquito Orders ...	23	1	273	267	7	261	7	5	24
Rats ...	2	...	22	22	...	22	...	...	2
Disinfection of infected houses	...	1	519	520	...	519	...	1	...
Wells ...	12	...	47	47	...	29	...	1	29
Closing Order ...	1	...	1	1	...	2	...	...	...
Minor Offences Ordinance ...	...	...	...	...	..	...	...	...	...
Total ...	313	16	5555	5552	19	5533	63	51	281

51 notices were cancelled for various reasons.

182 Nuisance notices were complied with during the year dealing with 332 houses of which 123 were structurally altered to provide light and ventilation.

209 houses were repaired, i.e., floors, drains, roof and latrines put in order.

1 marshy land was filled in and 72 other nuisances dealt with. In 63 cases work has been started.

14 permits were granted to erect latrines.

56 complaints were received and dealt with during the year.

Wells.

47 notices under Section 247 were served and 12 brought forward from 1927. 29 were complied with; 33 wells were closed.

Cemeteries.

The Sub-Inspector in charge visited the cemeteries 160 times.

Exhumations.

82 applications for exhumation of bodies were received, but only 57 bodies were exhumed under special licence.

Passengers.

415 passengers arrived from infected ports and passed through this office as against 358 last year.

Plans.

893 plans were sent in and examined in this office as against 862 last year.

Prosecutions.

690 summonses were issued during the year		659	Convictions
		32	Withdrawn
73 were brought forward from 1927 (vide list A)		1	Dismissed
		71	Carried forward
Total	763	Total	763

27 Abatement of Nuisance, 3 Closing, 5 Prohibition and 34 Mandatory Orders were obtained.

The fines imposed by the Magistrates amounted to $5,896.00 against $4,809.10 last year.

Disinfections.

525 houses were disinfected during the year for the following causes:—

Phthisis	286
Dysentery	44
Diarrhoea	129
Enteritis and Enteric	46
Chicken-pox	19
Diphtheria	1
Total	525

The houses disinfected being distributed as follows:—

Phthisis:—Bridge Street (14), Dato Kramat Road (12), Beach Street (10), Penang Road, Perak Road, Patani Road, Burmah Road and Chulia Street (9 each), Armenian Street (8), Carnarvon Street, East Jelutong and Rope Walk (7 each), Campbell Street, Argyll Road, Macalister Road, Magazine Road, Weld Quay, Transfer Road, Muntri Street, Noordin Street and Huttton Lane (5 each), Caunter Hall, West Jelutong, Seck Chuan Lane, Stewart Lane, Seang Tek Road, Jelutong Road, Scotland Road and Love Lane (4 each), Kedah Road, Gladstone Road, Kelawei Road, Kinta Lane, Acheen Street, Kuala Kangsar Road, Chulia Lane, Pahang Road, Macalister Lane and Madras Lane (3 each), Halfway Road, Perak Lane, King Street, Kampong Java Lama, Victoria Street, Sungei Pinang Road, Malay Street, Kimberley Street, Kampong Malabar, Cintra Street, Bishop Street, Maxwell Road, Batu Lanchang Road, Aier Etam Road, Edgcumbe Road, Green Lane and Market Street Ghaut (2 each), Carnarvon Lane, Kuantan Road, Seh Tan Court, Pangkor Road, Brick Kiln Road, China Street, Buckingham Street, Claimant Place, Prangin Lane, Chin Ho Square, Lorong Susu, Keng Kwee Street, Sungei Ujong Road, Toh Aka Lane, Siam Road, Jones Road, Malay Street Ghaut, Tye Sin Street, Kajang Road, Larut Road, McCullum Street, Presgrave Street, Gladstone Road, Market Street, Cheapside, McNair Street, Batu Lanchang, New Lane, Irving Road, Trang Road, Singora Lane, Malacca Street, Market Lane, Dato Koyah Road and Ceylon Lane (1 each).

Dysentery:—Jelutong Road (3), Transfer Road, Waterfall Road, Caunter Hall, Lorong Susu, Bridge Street, Burmah Road, and Perak Road (2 each), Noordin Street, Macalister Lane, Seang Tek Road, Cannon Square, Chulia Street, Penang Road, Church Street, Kampong Java Bharu, Sungei Penang Road, Weld Quay, Cintra Street, Hutton Lane, Patani Road, Prangin Road, Weld Quay, Prangin Lane, Campbell Street, New Lane, Scotland Road, North Beach, Soo Hong Lane, Kimberley Street, Siam Road, Halfway Road, Perlis Road, Krian Road and Kedah Road (1 each).

Diarrhoea:—Bridge Street (8), West Jelutong (7), East Jelutong (6), Chulia Street (5), Perak Road and Jelutong Road (4 each), Noordin Street, Carnarvon Lane, Magazine Road, Sungei Pinang Road, Weld Quay, Carnarvon Street and Tek Soon Street (3 each), Armenian Street, Chulia Lane, King Street, Acheen Street, Kedah Road, Macalister Road, McNair Street, Aier Etam Road, Seck Chuan Lane, Sungei Ujong Road, Queen Street, Kampong Java Bharu, Perak Lane, Patani Road, Katz Street, China Street, Beach Street, Presgrave Street Ghaut, Hutton Lane and Madras Lane (2 each), Maxwell Road, Toh Aka Lane, Buckingham Street, Dato Kramat Road, Green Lane, Gladstone Road, Prangin Lane, Batu Lanchang Road, Prangin Road, Kampong Malabar, Keng Kwee Street, Gladstone Road, Tye Sin Street, Kampong Java Lama, Rope Walk, Penang Road, Market Street, Pitt Street, Transfer Road, Anson Road, Kinta Lane, Waterfall Road, Burmah Road, Kelawei Road, Bukit Dunbar, Mt. Erskine Road, Cintra Street, Prangin Road Ghaut, Malay Street, Stewart Lane, Love Lane, Muntri Street, Seang Tek Road and Muda Lane (1 each).

Enteritis and Enteric:—Prangin Road (4), Beach Street and West Jelutong (3 each), Kimberley Street (2), Campbell Street, Cantonment Road, Macalister Road, Acheen Street, Bishop Street, Batu Gantong Road, Prangin Lane, Church Street, Chulia Street, Kinta Lane, Muda Lane, Dato Kramat Road, Burmah Road, York Road, Magazine Road, McNair Street, Transfer Road, Sri Bahari Road, Malacca Street, Noordin Street, Patani Road, Batu Lanchang, Hong Kong Street, Khoo Cheow Teong Court, Tye Sin Street, Presgrave Street, Cannon Square, Bridge Street, College Lane, Barrack Road, Lorong Slamat, Madras Lane, Aboo Sittee Lane, and Kampong Java Bharu (1 each).

Chicken-pox:—Stewart Lane and Patani Road (3 each), Gladstone Road and Dato Kramat Road (2 each), Siam Road, Anson Road, Madras Lane, Aboo Sittee Lane, Kampong Kolam, Kedah Road, Bishop Street, Noordin Street and Chulia Lane (1 each).

Diphtheria:—Larut Road (1).

Trades.

The fees collected during the year for trade licences amounted to $8,726.80 against $8,394.70, an increase of $332.10 (vide attached List B).

Common Lodging Houses.

902 Common Lodging Houses were licensed during the year against 839 in 1927, the fees collected amounted to $1,599.10 as against $1,596.80, an increase of 63 houses and an increase of fees of $2.30.

No night raids were made during the year.

Lodging Houses under the Minor Offences Ordinance.

36 Lodging Houses were licensed under the Minor Offences Ordinance against 30 in 1927.

Milk.

218 milk-sellers were registered in 1928 as against 211 in 1927, an increase of 7.

The Sanitary Inspectors spent an afternoon each month in testing milk by lactometer from the various milk-sellers whom they met in different parts of the town.

402 samples were tested during the year by them and 4,742 by the Laboratory Assistant.

27 samples which seemed to be below the standard were purchased and sent for analysis of which 23 samples were found to contain from 6% to 44% of added water.

48 summonses were issued (23 for selling milk adulterated with added water and 25 for offences against the bylaws and regulations, i.e., conveying fish in their milk pails, conveying milk for sale in bottles of a type not approved by the Health Officer, having bottles or plantain leaves in contact with their milk, or milk containing foreign matter). 20 were convicted for selling adulterated milk and fined—three $10 each, three $25 each, two $50 each, four $75 each, three $100 each, one $125, one $200, one $250 and one $500.

57 brought forward from 1927.

Total 105

52 convictions were obtained.
53 carried forward to 1929.

Total 105

Fines amounting to $2,491.50 were imposed against $1,184 in 1927, an increase of $1,307.50.

Vaccination.

Our vaccinators made 2,764 primary vaccinations of which 2,757 were successful and 7 not seen, and 238 secondary vaccinations of which 188 were successful, 30 modified, 6 not seen and 14 failed. 1,700 tubes of lymph were used at a cost of $510.

Private practitioners and public vaccinators made 1,085 primary vaccinations.

Anti-Mosquito Works.

The gangs were reduced by 29 men in June.

The Anti-Mosquito gangs did good work, cutting down vegetation, digging, levelling and clearing ditches, collecting old tins, coconut shells and burying them at Dato Kramat and Mount Erskine Roads, the foothills between Waterfall Road and Batu Gantong, Waterfall, Ayer Rajah, Perak, Burmah, Gottlieb, Brown, Scott, Scotland, Macalister, Brick Kiln, Anson, Patani, Seang Tek, Siam, Trang, Barrack, Cantonment, Kelawei, Krian, Larut, Jahudi, Pahang, Sungei Pinang, York, Jelutong, Batu Lanchang, Bell, Hogan, Adam and Barnett Roads, East Jelutong, Ayer Etam behind Ayer Etam Road private Market, Kinta, Singora, Green and Bagan Jermal Lanes, Lorong Salamat, Westlands and Babington Avenue; they also cleared the river banks twice from the Chetty's Temple to Perak Road bridge, before and after the Thaipusm they cleared up the ground in the vicinity of the Temple.

They also cleaned the banks of the Aier Etam stream from Batu Lanchang Lane bridge to its junction with the waterfall stream for the first time.

The number of chokras was increased by 15 making 45 in all and the gang divided into three. They under a supervisor for each gang went through the town and country areas destroying and clearing up the breeding places of mosquitoes generally.

The two oiling gangs under supervisors regularly oiled all ditches, pools and swamps within the town area and the Race Course, and since December 1927, Kelawei Road, Bagan Jermal, Mount Erskine, Western Road, Scotland Road including the foothills to Kampong Bharu, Green Lane, Caunter Hall, Perak Road, East and West Jelutong and Jelutong Village once a week; 256 gallons of crude oil, 40 gallons of Mineral Turpentine and 21,504 gallons of anti-mosquito mixture were used; the cost was $11,486.46.

The gangs also cleared up and drained private lands at the cost of the owners.

Staff.

Mr. A. A. Jeremiah retired on 6th August 1928 and Mr. R. J. Rangel was appointed in his place.

Five supervisors, Messrs. P. Gautier, J. Martin, J. King, B. Amirtharaj and A. Rahim were engaged in July, the first two for the oiling gangs and the latter three for the chokra gangs.

Mr. R. Lesslar was engaged as a Sanitary Sub-Inspector on 17th October.

The staff worked well throughout the year.

I have the honour to be,

Sir,

Your obedient servant,

W. A. WARD,

Chief Sanitary Inspector.

A

Prosecutions.	Brought forward from 1927.	Issued in 1928.	Cases in Court.	Convictions.	Withdrawn.	Dismissed.	A. N. O.	C. O.	P. O.	M. O.	Total orders obtained.	Fines.		Costs.	
												$	cts.	$	cts.
Nuisance Notice ...	2	51	47	41	6	...	27	3	1	...	31	154	50	21	50
Nuisance Order ...	9	15	16	15	1	...	...	...	...	...	...	90	50	7	50
Drains and Latrines ...	1	31	32	30	2	...	...	...	...	17	17	56	50	15	00
Trades ...	1	89	90	86	4	...	...	...	...	...	...	619	50	44	00
Common Lodging Houses	...	145	145	138	7	...	...	...	...	1	1	788	00	70	00
Breach of C.L.H. by-laws	...	20	20	20	...	...	...	...	...	...	...	189	00	10	00
Filthy premises ...	2	17	19	19	...	...	...	...	...	...	...	192	00	9	50
Sections 160/161 ...	...	27	27	25	2	...	...	...	...	15	15	94	00	12	50
Bakery by-laws ...	1	143	140	133	6	1	...	...	4	...	4	710	00	66	50
Milk { Adulterated ...	47	23	20	20	...	...	...	...	...	...	...	2130	00	104	50
Milk { Breach of by-laws	10	25	32	32	...	...	...	...	...	...	...	361	50	16	00
Failing to report birth ...	...	17	17	15	2	...	...	...	...	...	...	14	50	7	00
Failing to report death ...	...	3	3	3	...	...	...	...	...	...	...	1	50	1	50
Breach of pig by-laws ...	...	75	75	74	1	...	...	...	...	...	...	435	50	37	00
Breach of cattleshed by-laws ...	...	1	1	1	...	...	...	...	...	...	...	8	00	...	50
Lime Washing ...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...
Mosquitoes ...	...	5	5	5	...	...	...	...	...	...	...	31	00	2	50
Wells ...	...	1	1	1	...	...	...	...	...	1	1	...	...	...	50
Unlicensed Lodging House—Minor Offences Ordinance ...	...	1	1	1	...	...	...	...	...	...	...	20	00	...	50
Total ...	73	690	692	659	32	1	27	3	5	34	69	5896	00	426	50

B

Trade Licenses 1928.	No. 1927.	Fees.		No. 1928.	Fees.		No. Increase.	Fees.		No. Decrease	Fees.	
		$	cts.		$	cts.		$	cts.		$	cts.
Coal Depot ...	4	48	00	4	48	00	...	...	...	...	..	...
Charcoal Depot ...	29	174	00	32	192	00	3	18	00	...	...	..
Candle Factory ...	16	128	00	14	112	00	...	...	..	2	16	00
Cattleshed and Cattle ...	151	648	00	126	529	00	...	...	...	25	119	00
Wood Depot ...	90	540	00	92	552	00	2	12	00	...	...	..
Dyeing House ...	5	50	00	5	50	00	...	...	..	...	...	...
Fish Storing and Curing	45	540	00	38	456	00	...	...	...	7	84	00
Braziers, Foundries and Smithies ...	58	116	00	57	114	00	..	..	...	1	2	00
Pig Sties ...	73	146	00	71	142	00	...	...	...	2	4	00
Pig Sties (Free) ...	668	...	...	692	...	...	24	...	...	...	...	...
Pepper Washing Factory	1	10	00	1	10	00	..	...	...	...	...	..
Pottery Making ...	2	4	00	2	4	00	...	...	...	...	...	...
Rags, Bones and Feathers	3	36	00	5	60	00	2	24	00	...	...	..
Soap Factory ...	11	88	00	11	88	00	...	...	...	...	...	...
Stables and Horses ...	2	11	00	2	11	00	...	...	...	...	...	...
Sheep and Goats ...	5	20	70	6	25	80	1	5	10	...	...	...
Tanneries ...	17	408	00	17	408	00	...	...	..	...	...	...
Blachan Factory ...	2	24	00	2	24	00	...	...	...	...	...	...
Bakeshops ...	30	150	00	37	185	00	7	35	00	...	...	...
Cookshops ...	176	880	00	181	905	00	5	25	00	...	...	...
Eatingshops ...	718	3590	00	798	3990	00	80	400	00	...	...	...
Storing and Curing Hides	8	96	00	8	96	00	...	...	...	...	...	..
Sago Factory ...	1	10	00	...	...	..	..	...	...	1	10	00
Atap, Kajang and Straw	56	168	00	50	150	00	...	...	...	6	18	00
Sugar Boiling ..	13	78	00	16	96	00	3	18	00	...	...	...
Market Gardens ...	38	...	...	45	...	...	7	...	...	...	...	...
Drying Cloth ...	3	15	00	3	15	00	...	...	...	...	...	...
Milksellers ...	211	211	00	218	218	00	7	7	00	...	...	...
Lodging Houses (Minor Offences Ordinance) ..	30	30	00	36	36	00	6	6	00	...	...	...
Fresh Fish and Meat ...	35	175	00	42	210	00	7	35	00	...	...	...
Total ...	2501	8394	70	2611	8726	80	154	585	10	44	253	00
Common Lodging Houses	839	1596	80	902	1599	10	63	2	30	...	...	...